

Listing of Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claim 1 (currently amended): A golf ball including a composition comprising:
an unsaturated polymer;
a cross-linking agent comprising a peroxide;
a peptizer; and
an accelerator.

Claim 2 (original): The golf ball according to claim 1, wherein the composition includes greater than about 0.1 part by weight of the peptizer per 100 parts by weight of the unsaturated polymer.

Claim 3 (original): The golf ball according to claim 1, wherein the composition includes greater than about 0.5 part by weight of the peptizer per 100 parts by weight of the unsaturated polymer.

Claim 4 (original): The golf ball according to claim 1, wherein the composition includes greater than about 2.5 parts by weight of the peptizer per 100 parts by weight of the unsaturated polymer.

Claim 5 (original): The golf ball according to claim 1, wherein the peptizer is selected from the group consisting of pentachlorothiophenol, a metal salt of pentachlorothiophenol, a non-metal salt of pentachlorothiophenol, and dibenzamido diphenyldisulfide.

Claim 6 (original): The golf ball according to claim 1, wherein the composition includes from about 0.1 part to about 10 parts by weight of the accelerator per 100 parts by weight of the unsaturated polymer.

Claim 7 (original): The golf ball according to claim 1, wherein the composition includes from about 0.2 part to about 5 parts by weight of the accelerator per 100 parts by weight of the unsaturated polymer.

Claim 8 (original): The golf ball according to claim 1, wherein the composition includes from about 0.5 part to about 1.5 parts by weight of the accelerator per 100 parts by weight of the unsaturated polymer.

Claim 9 (original): The golf ball according to claim 1, wherein the accelerator is selected from the group consisting of 2-mercaptobenzothiazole and a salt of 2-mercaptobenzothiazole.

Claim 10 (original): The golf ball according to claim 1, wherein the composition includes from about 0.05 part to about 5 parts by weight of the cross-linking agent per 100 parts by weight of the unsaturated polymer.

Claim 11 (original): The golf ball according to claim 1, wherein the composition includes from about 0.2 part to about 3 parts by weight of the cross-linking agent per 100 parts by weight of the unsaturated polymer.

Claim 12 (original): The golf ball according to claim 1, wherein the composition includes from about 0.5 part to about 1.5 parts by weight of the cross-linking agent per 100 parts by weight of the unsaturated polymer.

Claim 13 (original): The golf ball according to claim 1, wherein the unsaturated polymer is selected from the group consisting of 1,2-polybutadiene, cis-1,4-polybutadiene, trans-1,4-polybutadiene, cis-polyisoprene, trans-polyisoprene, polychloroprene, polybutylene, styrene-butadiene rubber, block copolymer of styrene and butadiene, block copolymer of styrene and isoprene, nitrile rubber, silicone rubber, polyurethane, and mixtures thereof.

Claim 14 (currently amended): The golf ball according to claim 1, wherein the composition further comprises ~~an ingredient~~ one or more ingredients selected from the group consisting of UV stabilizers, photo stabilizers, antioxidants, colorants, dispersants, mold releasing agents, processing aids, and fillers.

Claim 15 (currently amended): The golf ball according to claim 14, wherein the ~~ingredient is~~ one or more ingredients include a filler that adjusts a density of the composition.

Claim 16 (currently amended): The golf ball according to claim 14, wherein the ~~ingredient is~~ one or more ingredients include a filler selected from the group consisting of zinc oxide, tungsten, and barium sulfate.

Claim 17 (currently amended): The golf ball according to claim 14, wherein the ~~ingredient is~~ one or more ingredients include a filler and the composition includes from about 10 parts to about 80 parts by weight of the filler per 100 parts by weight of the unsaturated polymer.

Claim 18 (original): The golf ball according to claim 1, wherein the composition further comprises a compound selected from the group consisting of an unsaturated carboxylic acid, a metal salt of the unsaturated carboxylic acid, and mixtures thereof.

Claim 19 (original): The golf ball according to claim 18, wherein the composition includes from about 20 parts to about 60 parts by weight of the compound per 100 parts by weight of the unsaturated polymer.

Claim 20 (original): The golf ball according to claim 1, further comprising:
a core; and
a cover layer over the core;
wherein at least one of the core and the cover layer includes the composition.

Claim 21 (original): The golf ball according to claim 20, wherein the core includes:
an inner core; and
an outer core encasing the inner core.

Claim 22 (original): The golf ball according to claim 20, wherein the core includes a material in liquid form.

Claim 23 (original): The golf ball according to claim 20, further comprising a layer of rubber thread located between the core and the cover layer.

Claim 24 (original): The golf ball according to claim 1, further comprising:
a core;
at least one intermediate layer over the core; and
a cover layer over the outermost intermediate layer;
wherein at least one of the core, the at least one intermediate layer, and the cover layer includes the composition.

Claim 25 (currently amended): A golf ball including a composition comprising:
an unsaturated polymer;
a cross-linking agent comprising a peroxide;
a peptizer; and
an accelerator;
wherein the composition includes:

from about 0.2 part to about 3 parts by weight of the cross-linking agent per 100 parts by weight of the unsaturated polymer,
greater than about 0.5 part by weight of the peptizer per 100 parts by weight of the unsaturated polymer, and
from about 0.2 part to about 5 parts by weight of the accelerator per 100 parts by weight of the unsaturated polymer.

Claim 26 (original): The golf ball according to claim 25, wherein the composition includes greater than about 2.5 parts by weight of the peptizer per 100 parts by weight of the unsaturated polymer.

Claim 27 (original): The golf ball according to claim 25, wherein the peptizer is selected from the group consisting of pentachlorothiophenol, a metal salt of pentachlorothiophenol, a non-metal salt of pentachlorothiophenol, and dibenzamido diphenyldisulfide.

Claim 28 (original): The golf ball according to claim 25, wherein the accelerator is selected from the group consisting of 2-mercaptobenzothiazole and a salt of 2-mercaptobenzothiazole.

Claim 29 (original): The golf ball according to claim 25, wherein the unsaturated polymer is selected from the group consisting of 1,2-polybutadiene, cis-1,4-polybutadiene, trans-1,4-polybutadiene, cis-polyisoprene, trans-polyisoprene, polychloroprene, polybutylene, styrene-butadiene rubber, block copolymer of styrene and butadiene, block copolymer of styrene and isoprene, nitrile rubber, silicone rubber, polyurethane, and mixtures thereof.

Claim 30 (currently amended): The golf ball according to claim 25, wherein the composition further comprises ~~an ingredient~~ one or more ingredients selected from the group consisting of UV stabilizers, photo stabilizers, antioxidants, colorants, dispersants, mold releasing agents, processing aids, and fillers.

Claim 31 (currently amended): The golf ball according to claim 30, wherein the ~~ingredient is~~ one or more ingredients include a filler that adjusts a density of the composition.

Claim 32 (currently amended): The golf ball according to claim 30, wherein the ~~ingredient is~~ one or more ingredients include a filler selected from the group consisting of zinc oxide, tungsten, and barium sulfate.

Claim 33 (currently amended): The golf ball according to claim 30, wherein the ~~ingredient is~~ one or more ingredients include a filler and the composition includes from about 10 parts to about 80 parts by weight of the filler per 100 parts by weight of the unsaturated polymer.

Claim 34 (original): The golf ball according to claim 25, wherein composition further comprises a compound selected from the group consisting of an unsaturated carboxylic acid, a metal salt of the unsaturated carboxylic acid, and mixtures thereof.

Claim 35 (original): The golf ball according to claim 34, wherein the composition includes from about 20 parts to about 60 parts by weight of the compound per 100 parts by weight of the unsaturated polymer.

Claim 36 (original): The golf ball according to claim 25, further comprising:
a core; and
a cover layer over the core;
wherein at least one of the core or cover layer includes the composition.

Claim 37 (original): The golf ball according to claim 36, wherein the core includes:

an inner core; and
an outer core encasing the inner core.

Claim 38 (original): The golf ball according to claim 36, wherein the core includes a material in liquid form.

Claim 39 (original): The golf ball according to claim 36, further comprising a layer of rubber thread located between the core and the cover layer.

Claim 40 (original): The golf ball according to claim 25, further comprising:
a core;
at least one intermediate layer over the core; and
a cover layer over the outermost intermediate layer;
wherein at least one of the core, the at least one intermediate layer, and the cover layer includes the composition.

Claim 41 (currently amended): A method for manufacturing a golf ball, the method comprising:

providing:

an unsaturated polymer,
a cross-linking agent comprising a peroxide,
a peptizer, and
an accelerator;

preparing a composition from the unsaturated polymer, the cross-linking agent, the peptizer, and the accelerator; and

forming the composition into the golf ball.

Claims 42-47 (canceled)

Claim 48 (new): The golf ball according to claim 1, and further comprising a co-cross-linking agent that is a metal salt of an unsaturated carboxylic acid.

Claim 49 (new): The golf ball according to claim 1, wherein the peptizer is a non-metal salt of an organosulfur compound.

Claim 50 (new): The golf ball according to claim 49, wherein the peptizer is selected from the group consisting of an amine salt of pentachlorothiophenol, an ammonium salt of pentachlorothiophenol, and mixtures thereof.

Claim 51 (new): The golf ball according to claim 1, wherein the cross-linking agent is selected from the group consisting of diacetyl peroxide; di-tert-butyl peroxide; dibenzoyl peroxide; dicumyl peroxide; 2,5-dimethyl-2,5-di(benzoylperoxy)hexane; 1,4-bis-(t-butylperoxyisopropyl-)benzene, t-butylperoxybenzoate; 2,5-dimethyl-2,5-di-(t-butylperoxy)hexyne-3; 1,1-bis(t-butylperoxy)-3,3,5 tri-methylcyclohexane; di-(2,4-dichlorobenzoyl)peroxide, and mixtures thereof.

Claim 52 (new): The golf ball according to claim 51, wherein the cross-linking agent includes 2,5-dimethyl-2,5-di-(t-butylperoxy)hexyne-3 and 1,1-bis(t-butylperoxy)-3,3,5 tri-methylcyclohexane.

Claim 53 (new): The golf ball according to claim 25, and further comprising a co-cross-linking agent that is a metal salt of an unsaturated carboxylic acid.

Claim 54 (new): The golf ball according to claim 25, wherein the peptizer is a non-metal salt of an organosulfur compound.

Claim 55 (new): The golf ball according to claim 54, wherein the peptizer is selected from the group consisting of an amine salt of pentachlorothiophenol, an ammonium salt of pentachlorothiophenol, and mixtures thereof.

Claim 56 (new): The golf ball according to claim 25, wherein the cross-linking agent is selected from the group consisting of diacetyl peroxide; di-tert-butyl peroxide; dibenzoyl peroxide; dicumyl peroxide; 2,5-dimethyl-2,5-di(benzoylperoxy)hexane; 1,4-bis-(t-butylperoxyisopropyl-)benzene, t-butylperoxybenzoate; 2,5-dimethyl-2,5-di-(t-butylperoxy)hexyne-3; 1,1-bis(t-butylperoxy)-3,3,5 tri-methylcyclohexane; di-(2,4-dichlorobenzoyl)peroxide, and mixtures thereof.

Claim 57 (new): The golf ball according to claim 56, wherein the cross-linking agent includes 2,5-dimethyl-2,5-di-(t-butylperoxy)hexyne-3 and 1,1-bis(t-butylperoxy)-3,3,5-tri-methylcyclohexane.

Claim 58 (new): A golf ball including a composition comprising:
an unsaturated polymer;
a cross-linking agent comprising a peroxide; and
a non-metal salt of an organosulfur compound.

Claim 59 (new): A golf ball according to claim 58, wherein the organosulfur compound is 2-mercaptobenzothiazole.

Claim 60 (new): A golf ball according to claim 58, wherein the non-metal salt of an organosulfur compound is a cyclohexylamine salt of 2-mercaptobenzothiazole.